Acta Naturae 2014 vol.6 N22, pages 41-51

Mycoplasma contamination of cell cultures: Vesicular traffic in bacteria and control over infectious agents

Chernov V., Chernova O., Sanchez-Vega J., Kolpakov A., Ilinskaya O.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2014 Park-media, Ltd. Cell cultures are subject to contamination either with cells of other cultures or with microorganisms, including fungi, viruses, and bacteria. Mycoplasma contamination of cell cultures is of particular importance. Since cell cultures are used for the production of vaccines and physiologically active compounds, designing a system for controlling contaminants becomes topical for fundamental science and biotechnological production. The discovery of extracellular membrane vesicles in mycoplasmas makes it necessary to take into consideration the bacterial vesicular traffic in systems designed for controlling infectious agents. The extracellular vesicles of bacteria mediate the traffic of proteins and genes, participate in cell-to-cell interactions, as well as in the pathogenesis and development of resistance to antibiotics. The present review discusses the features of mycoplasmas, their extracellular vesicles, and the interaction between contaminants and eukaryotic cells. Furthermore, it provides an analysis of the problems associated with modern methods of diagnosis and eradication of mycoplasma contamination from cell cultures and prospects for their solution.

Keywords

Cell cultures, Diagnosis and eradication, Mycoplasma contamination